

WHAT IS CLAIMED IS:

- 1           1. A process for self-aligned manufacturing integrated electronic devices,  
2           comprising the steps of:
  - 3           - forming, in a semiconductor wafer having a substrate, insulation structures  
4           delimiting active areas and projecting from said substrate;
  - 5           - forming a first conductive layer coating said insulation structures and said  
6           active areas; and
  - 7           - partially removing said first conductive layer;
- 8           wherein, prior to forming said first conductive layer, forming recesses in said  
9           insulation structures.
- 1           2. The process according to claim 1 wherein said step of forming said first  
2           conductive layer comprises filling said insulation structures.
- 1           3. The process according to claim 1 wherein said step of forming recesses  
2           comprises removing side portions of said insulation structures so as to form first  
3           recesses.
- 1           4. The process according to claim 3 wherein said first recesses are defined  
2           on top and at the side of respective ones of said active areas.
- 1           5. The process according to claim 3 wherein said step of partially removing  
2           comprises forming first conductive regions, which extend inside at least one of said  
3           first recesses and on top of a respective said active area.
- 1           6. The process according to claim 5 wherein said first conductive regions are  
2           floating gates of respective first memory cells.
- 1           7. The process according to claim 1 wherein said step of forming recesses  
2           comprises removing central portions of said insulation structures so as to form  
3           second recesses.
- 1           8. The process according to claim 7 wherein said second recesses are  
2           delimited laterally and at the bottom by respective ones of said insulation structures.
- 1           9. The process according to claim 8 wherein said step of partial removing  
2           comprises forming second conductive regions accommodated inside respective  
3           ones of said second recesses.
- 1           10. The process according to claim 9 wherein said second conductive regions  
2           comprise resistors.

1           11. The process according to claim 9 wherein second conductive regions  
2 comprise first plates of respective capacitors.

1           12. The process according to claim 1 wherein said step of forming recesses  
2 comprises performing at least one first masked etch of said insulation structures.

1           13. The process according to claim 12 wherein said step of forming recesses  
2 comprises performing a second masked etch of said insulation structures.

1           14. The process according to claim 1 wherein said step of partially removing  
2 comprises planarizing said wafer.

1           15. The process according to claim 1 wherein said step of partially removing  
2 is followed by the steps of:

- 3           - forming a dielectric layer on top of said wafer;  
4           - forming a second conductive layer on top of said dielectric layer; and  
5           - selectively removing said dielectric layer and said second conductive layer.

1           16. The process according to claim 15 wherein said step of selectively  
2 removing comprises forming third conductive regions.

1           17. The process according to claim 6, wherein said third conductive regions  
2 comprise control gates of said memory cells.

1           18. The process according to claim 11 wherein said third conductive regions  
2 comprise second plates of said capacitors.

1           19. An integrated electronic device comprising:  
2           - a semiconductor body having a substrate; and  
3           - a plurality of insulation structures delimiting active areas and having  
4 respective portions projecting from said substrate; wherein said insulation structures  
5 have respective recesses, which accommodate at least partially conductive regions.

1           20. The device according to claim 19 wherein said recesses are defined  
2 laterally with respect to respective projecting portions of said insulation structures.

1           21. The device according to claim 19 wherein said conductive regions  
2 comprise terminals of memory cells arranged on top of respective said active areas  
3 and extending laterally inside at least one of said recesses.

1           22. The device according to claim 19 wherein said recesses are defined  
2 centrally with respect to respective said projecting portions of said insulation  
3 structures.

1           23. The device according to claim 22 wherein said conductive regions are  
2 entirely accommodated inside respective said recesses.

1           24. The device according to claim 22 wherein said conductive regions  
2 comprise resistors.

1           25. The device according to claim 22 wherein said conductive regions  
2 comprise first plates of capacitors.

1           26. An integrated circuit, comprising:  
2 a substrate having an active region;  
3 first and second insulators disposed adjacent to the active region and defining  
4 a recess over a portion of the active region and over a portion of one of the  
5 insulators; and  
6 a first conductor disposed in the recess.

1           27. The integrated circuit of claim 26 wherein the first and second  
2 insulators respectively comprise first and second projections that define the recess.

1           28. The integrated circuit of claim 26, further comprising:  
2 first and second trenches disposed in the substrate; and  
3 wherein the first and second insulators are respectively disposed in the first  
4 and second trenches.

1           29. The integrated circuit of claim 26 wherein the first and second  
2 insulators define the recess over respective portions of both the first and second  
3 insulators.

1           30. The integrated circuit of claim 26, further comprising a third insulator  
2 disposed between the first conductor and the active region of the substrate.

1           31. The integrated circuit of claim 26 wherein the active region and the  
2 conductor compose a memory cell.

1           32. The integrated circuit of claim 26 wherein the conductor composes a  
2 floating gate of a nonvolatile memory cell.

1           33. The integrated circuit of claim 26, further comprising:  
2 a third insulator disposed on the first conductor; and  
3 a second conductor disposed on the third insulator and overlapping the first  
4 conductor.

1        34.    An integrated circuit, comprising:  
2        a substrate;  
3        a first insulator disposed in the substrate and defining a recess; and  
4        a first conductor disposed in the recess.

1        35.    The integrated circuit of claim 34 wherein the first insulator comprises  
2        projections that define the recess.

1        36.    The integrated circuit of claim 34, further comprising:  
2        a trench disposed in the substrate; and  
3        wherein the first insulator is disposed in the trench.

1        37.    The integrated circuit of claim 34 wherein the first conductor composes  
2        a resistor.

1        38.    The integrated circuit of claim 34 wherein the first conductor composes  
2        a plate of a capacitor.

1        39.    The integrated circuit of claim 34, further comprising:  
2        a second insulator disposed on the first conductor; and  
3        a second conductor disposed on the second insulator and overlapping the  
4        first conductor.

1        40.    A method, comprising:  
2        forming first and second insulators in a substrate;  
3        forming a recess in a portion of one of the insulators and over a region of the  
4        substrate located adjacent to the first and second insulators; and  
5        forming a first conductor in the recess.

1        41.    The method of claim 40 wherein forming the first and second insulators  
2        comprises:  
3        forming first and second trenches in the substrate; and  
4        forming an insulating material in the trenches.

1        42.    The method of claim 40 wherein forming the recess comprises forming  
2        the recess in respective portions of the first and second insulators.

1        43.    The method of claim 40, further comprising forming a third insulator on  
2        the region of the substrate located adjacent to the first and second insulators.

1        44.    The method of claim 40, further comprising:  
2        forming a third insulator on the first conductor; and

3           forming a second conductor on the third insulator and overlapping the first  
4 conductor.

1           45.    A method, comprising:  
2           forming a first insulator in a substrate;  
3           forming a recess in the first insulator; and  
4           forming a first conductor in the recess.

1           46.    The method of claim 45 wherein forming the first insulator comprises:  
2           forming a trench in the substrate; and  
3           forming an insulator material in the trench.

1           47.    The method of claim 45, further comprising forming a second insulator  
2 on the first conductor.

1           48.    The method of claim 45, further comprising:  
2           forming a second insulator on the first conductor; and  
3           forming a second conductor on the second insulator.